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Listing of Claims

The following listing of claims will replace all prior versions, and listings, of claims in the subject application:

1. (currently amended) A power-supply apparatus for outputting from an output terminal an output voltage V_{out} corresponding to an input voltage input through an input terminal, via each of one or more switching elements, each element having a control electrode, ~~a voltage input to an input terminal~~, said power-supply apparatus comprising:

a voltage-generating circuit for generating ~~an output~~ a first voltage V_o proportional to a second voltage between an input end and an output end of said switching element so as to output the generated first voltage V_o , said first voltage V_o being different from said output voltage V_{out} ; and

a control circuit for controlling an operation of said switching element depending on the ~~output~~ first voltage V_o of the voltage-generating circuit;

wherein the control circuit causes the switching element to reduce an output current when the ~~output~~ first voltage V_o of the voltage-generating circuit exceeds a predetermined reference voltage V_s .

2. (currently amended) A power-supply apparatus for outputting from an output terminal an output voltage V_{out} corresponding to a voltage input through an input terminal, via each of one or more switching elements, each element having a control electrode, ~~a voltage input to an input terminal~~, said power-supply apparatus comprising:

a voltage-generating circuit for generating ~~an output~~ a first voltage V_o proportional to a

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second voltage between said input terminal and said output terminal so as to output the generated first voltage V_o , said first voltage V_o being different from said output voltage V_{out} ; and

a control circuit for controlling an operation of said switching element depending on the ~~output~~ first voltage V_o of the voltage-generating circuit;

wherein the control circuit causes the switching element to reduce an output current when the ~~output~~ first voltage V_o of the voltage-generating circuit exceeds a predetermined reference voltage V_s .

3. (currently amended) A power-supply apparatus for controlling a voltage input to an input terminal such that the voltage reaches at or below a predetermined clamping voltage so as to output ~~said controlled~~ an output voltage V_{out} from an output terminal, said power-supply apparatus comprising:

one or more switching elements, each having a control electrode that is connected between said input terminal and the output terminal;

a voltage-generating circuit for generating ~~an output~~ a first voltage V_o proportional to a second voltage between an input end and an output end of each of said switching elements so as to output the generated first voltage V_o , said first voltage V_o being different from said output voltage V_{out} ; and

a control circuit for controlling an operation of said switching element depending on the ~~output~~ first voltage V_o of the voltage-generating circuit;

wherein the control circuit causes the switching element to reduce an output current when the ~~output~~ first voltage V_o of the voltage-generating circuit exceeds a predetermined reference

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voltage V_s .

4. (currently amended) A power-supply apparatus for controlling a voltage input to an input terminal such that the voltage reaches at or below a predetermined clamping voltage so as to output ~~said controlled~~ an output voltage V_{out} from an output terminal, said power-supply apparatus comprising:

one or more switching elements, each having a control electrode that is connected between said input terminal and the output terminal;

a voltage-generating circuit for generating ~~an output~~ a first voltage V_o proportional to a second voltage between said input terminal and said output terminal so as to output the generated first voltage V_o , said first voltage V_o being different from said output voltage V_{out} ; and

a control circuit for controlling an operation of each of said switching elements depending on the ~~output~~ first voltage V_o of the voltage-generating circuit;

wherein the control circuit causes the switching element to reduce an output current when the ~~output~~ first voltage V_o of the voltage-generating circuit exceeds a predetermined reference voltage V_s .

5. (original) The power-supply apparatus as claimed in claim 1, wherein the voltage-generating circuit comprises:

a first MOS transistor having a source connected to said input terminal and a gate connected to said output terminal; and

a second MOS transistor having a source, a drain and a gate that are respectively connected

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to a drain of the first MOS transistor, a ground voltage, and a predetermined voltage V_{bias} ;

and wherein said first MOS transistor and said second MOS transistor, being of the same type of MOS transistor output from a junction of said first MOS transistor and second MOS transistor a voltage V_o proportional to a voltage between said input terminal and the output terminal.

6. (original) The power-supply apparatus as claimed in claim 5, wherein said first MOS transistor and said second MOS transistor have the same electrical characteristics.

7. (original) The power-supply apparatus as claimed in claim 5, wherein each of said first MOS transistor and said second MOS transistor is a PMOS transistor.

8. (original) The power-supply apparatus as claimed in claim 5, wherein said proportional voltage V_o is a voltage having added to a predetermined voltage V_{bias} a gate-source voltage of the second MOS transistor.

9. (original) The power-supply apparatus as claimed in claim 1, wherein said control circuit comprises:

a reference-voltage generating circuit for generating a predetermined reference voltage V_s so as to output the generated voltage; and

a comparator circuit for controlling the operation of said switching element such that said proportional output voltage V_o reaches said reference voltage V_s .

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10. (original) The power-supply apparatus as claimed in claim 1, wherein said switching element, said voltage-generating circuit, and said control circuit are integrated into one integrated circuit.

11. (new) The power-supply apparatus as claimed in claim 1, wherein said first voltage V_o is not directly proportional to said output voltage V_{out} .

12. (new) The power-supply apparatus as claimed in claim 1, wherein as said input voltage input through an input terminal remains constant and output current increases, said output voltage V_{out} output from said output terminal decreases and said first voltage V_o increases.